

MISSOURI CONSERVATIONIST

October
2006

Volume 67
Issue 10

Serving Nature & You



Vantage Point

Learning Outdoors

Step outside on cool October mornings to the earthy aroma of fallen leaves, honks of passing geese, and mist rising slowly from ponds. It's easy to find simple pleasures outdoors, the gifts of this season. Easy, that is, away from the concrete.

If you have children—or even if you don't—"No Child Left Behind" is something you've often heard as schools try to meet national testing needs. In response to that, there's a new phrase: "No child left indoors." The great thing is that it doesn't take an act of Congress.

Richard Louv's book, *Last Child in the Woods*, describes problems created by children's lack of contact with nature. Effects of this "nature deficit disorder" include obesity, attention deficit disorders and more. Seeing the problem is one thing, though; creating solutions is quite another.

Helping Missourians connect with nature is an important goal for us. However, children spend less and less time outdoors. They're also likely to learn more about a rainforest than a Missouri forest. At the same time, teachers and administrators work to create meaningful learning experiences, but they face the burden of mandatory testing and working with limited funds.

"What," we asked ourselves, "can we do about it? How can we help teachers bring fun and learning about nature in our state and local communities into the classroom? And even better, how can we get Missouri children outdoors?"

Our answer is "Learning Outdoors," a new school program we're piloting this year in about 30 schools across the state. We hope to expand it to many schools in the years ahead. You may have noticed in September's magazine that it's one of the actions in *The Next Generation* plan. In "Learning Outdoors" we:

- ▲ Create educational units on keeping Missouri's animals and plants healthy.
- ▲ Ensure these units help teachers prepare students for tests—helping to overcome rather than add to testing burdens.
- ▲ Require at least one of the related teaching activities be done outside.



CLIFF WHITE

- ▲ Support schools with grants for field trips, teaching materials and/or enhancement of outdoor learning areas on school grounds. Grants will be flexible to meet the needs and resources of particular schools.

Our first unit covers water and the life it supports in Missouri. It targets 6th–8th grades. After the pilot year, we'll be ready to provide it to more schools. The next unit will target grades 3–5. It will focus on wildlife and the habitats they need, and be ready for schools in 2008. We're also starting to develop variations on a "Conservation 101" unit for high school science and agriculture education classes.

Another program we offer to schools, especially 6th–12th grades, focuses on lifelong skills related to the outdoors. From a menu of five key skills, schools can choose teacher training in archery, map and compass, fishing, shooting sports, and camping/outdoor survival. Though this isn't a new program, over the next year we're going to make the offerings even better and easier to put into action.

Connecting to nature and the outdoors may be one of the most important things we can do for our children and ourselves. We're eager to help make it happen. But you don't have to wait for a school program to get started. Just step outside with those you love today to enjoy the gifts of the season.

Lorna Domke, outreach and education division chief



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NATURE SHOP

Tear out this month's insert to shop for books, tools and programs that bring you eye to eye with outdoor Missouri.



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Phone: 573/522-4115 ext. 3856 or 3249

Address: Circulation
P.O. Box 180
Jefferson City 65102-0180

E-mail subscriptions:

Subscriptions@mdc.mo.gov

Online subscriptions and address changes:

mdc.mo.gov/conmag/subscribe

Cost of subscriptions:

Free to Missouri households
Out of State \$7 per year
Out of Country \$10 per year

Address Changes:

Don't miss an issue due to an address change. Go online, call, write or e-mail us to update your information.



Reflections

THE EDUCATED HUNTER

I wanted to share with you the pleasure my grandson and I get from being together scouting, hunting and fishing in the wonderful Missouri outdoors.

Jessy Pritchett, my grandson, and I have been hunting together since he was 6 years old. Last youth season he was 12 and harvested his first deer. I don't know who was thrilled the most, but it will be shared by us for the rest of our lives.

Jessy signed up to take his hunter safety class the first opportunity he had and was so proud of himself when he passed that he could hardly wait for it to come in the mail. When it did, you would have thought it was his birthday.

Bill Linnartz, Centerview

I really like the *Missouri Conservationist*.

I enjoy the whole magazine, but I really like the articles about animals and hunting. I'm a Star Scout and I'm trying to get one of my merit badges. I was wondering if you could publish information on where 15-year-olds can go for hunting safety.

Jason Estep, Kansas City

Editor's note: Hunter education is offered regularly throughout the state, and anyone age 11 and older can be certified. You'll learn about firearm safety, hunting ethics and etiquette, why we have seasons and limits, and how to choose the right firearms for the game you hunt. To find a class in your area, go to www.missouriconservation.org/hunt/heclass-search.html or contact your regional office (see page 1 for phone numbers).



IT'S NOT EASY BEING BLUE

Glen Fessler caught this unusual-colored bullfrog (held by Glen's son Kyle) while frogging at a farm pond near Salisbury. Though rarely seen, bullfrogs can develop blue skin if their bodies lack the ability to produce enough yellow pigment. The frog currently lives in a display at the Shepherd of the Hills Hatchery in Branson, where it delights visitors and enjoys meals of only the freshest crickets and earthworms. Found statewide, bullfrogs are Missouri's largest frog. They normally range in color from green to brown. Frog season runs June 30th to Oct. 31st this year.

CONSERVATION 24/7

Thank you so much for the information on your Web site. I have always been a big fan of your Department and my kids have learned about you from your exhibit at the Missouri State Fair (we love your animals there!).

Tonight my kids found our yellow Lab running around with a turtle in her mouth. From your site, I have guessed it is a box turtle. As your article "Kids & Turtles" [www.missouriconservation.org/kids/out-in/2000/01/4.htm] says, "Can we keep it?" was the first thing I heard. Luckily, I can show them that our Department of Conservation says that we should not keep it over 2 weeks

Kimi Nelson, Kearney

PICTURE-PERFECT SPOT

I am curious as to where the picture was taken on page 27 of the Sept. 2006 issue?

Bill Hamilton, Rocky Comfort

Editor's note: The photo was taken at Stout's Creek near Highway 72 in Iron County.

A FAMILIAR FACE

I was just skimming and saw the article by Mr. Vance and the Meet Our Contributors piece inside the back cover. It reminds me how much I looked forward to Mr. Vance's articles in years past. Always entertaining and thoughtful writing.

Charles D. Rollins, Arlington, TN

Editor's note: Joel Vance is the author of Grandma and the Buck Deer; Bobs, Brush and Brittanies; Tails I Lose; Down Home Missouri; and Autumn Shadows. They are available from Cedar Glade Press, Box 1664, Jefferson City, MO 65102. Call 573/782-3875 for more information.

LIKING THE LONG VIEW

I just read two articles in the Sept. issue of the *Conservationist* that I have a

comment on. (1) "The Next Generation of Conservation at Work": I read every inch of it and appreciated it very much. With plans like these, we as a state will stay the envy of the rest of the country for many years to come. I had the pleasure of hunting with two conservation agents from Virginia last January. When they found out we were from Missouri, all they talked about for the next three hours is how the 1/8 cent

conservation tax got started and how they are using it to improve Missouri conservation. (2) "Waterfowl Hunting Changes" [News & Almanac, Jim Low]: I, as a 30-plus-year duck hunter, applaud whoever it was that made this decision. The opportunities for hunting ducks at the waterfowl areas are very limited, and we should limit it to residents of Missouri.

Anthony J. Ewen, St. Louis

The letters printed here reflect readers' opinions about the Conservationist and its contents. Space limitations prevent us from printing all letters, but we welcome signed comments from our readers. Letters may be edited for length and clarity.

Ask the Ombudsman



Q: I'm not a Missouri resident, but in past years I've been able to apply for waterfowl reservations on wetland conservation areas. This year I'm not allowed to apply. Why?

A: The application period for waterfowl reservations is in September. Starting this year, the Department of Conservation has limited applications to residents only. Nonresidents may still accompany a resident reservation

holder as a member of a hunting party, and they can draw for available blinds in the daily draw for non-reservation holders.

In the past, when resident hunters complained about losing out to nonresidents, statistics indicated that a very small number of nonresidents were participating in the program. That's changed fairly dramatically. Records show that at some Department wetland areas, nonresidents made up more than 20 percent of the hunters.

Unfortunately, the issue of resident versus nonresident is a contentious matter. I don't think a solution that suits everyone will ever be found, but for now the Department feels that limiting waterfowl hunting applications to residents, while still allowing nonresidents to continue to hunt (as described above), is best.

Permit fees are another sore point with local and out-of-state hunters. Residents feel that nonresidents get a bargain, and nonresidents say the fees are too high. The Annual Hunting & Fishing Permit Distribution & Sales Summary (available online at www.missouriconservation.org/documents/permits/hunfis_04.pdf) provides permit price comparisons for Missouri and its neighboring states. Bear in mind, permits from different states rarely provide similar privileges—a kink that prevents reciprocal permits. Nonresident permit fees will increase in 2007.

Ombudsman Ken Drenon will respond to your questions, suggestions or complaints concerning Conservation Department programs. Write him at P.O. Box 180, Jefferson City, MO 65102-0180, call him at 573/522-4115, ext. 3848, or e-mail him at Ken.Drenon@mdc.mo.gov.

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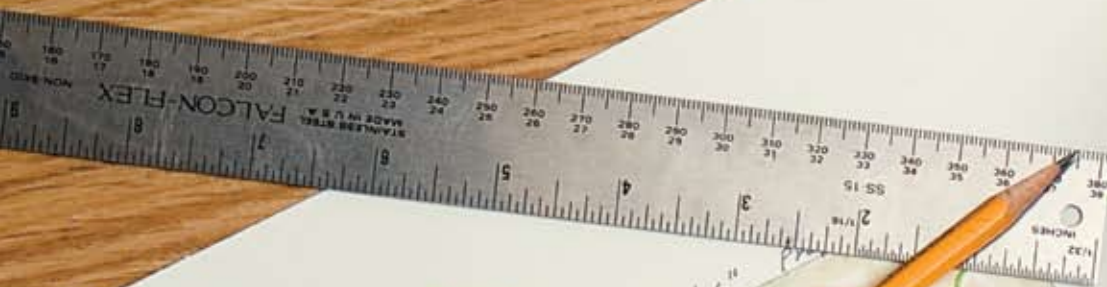
CIRCULATION Laura Scheuler

The *Missouri Conservationist* (ISSN 0026-6515) is the official monthly publication of the Missouri Department of Conservation, 2901 West Truman Boulevard, Jefferson City, MO (Mailing address: P.O. Box 180, Jefferson City, MO 65102.) Subscription free to adult Missouri residents; out of state \$7 per year; out of country \$10 per year. Notification of address change must include both old and new address (send mailing label with the subscriber number on it) with 60-day notice. Preferred periodical postage paid at Jefferson City, Mo., and at additional entry offices. Postmaster: Send correspondence to Circulation, P.O. Box 180, Jefferson City, MO 65102-0180. Phone: 573/751-4115. Copyright © 2006 by the Conservation Commission of the State of Missouri.

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Printed in USA

♻️ Printed on recycled paper with soy ink






Constructing with Care

You have finally found the perfect piece of property on which to build your dream home. It is a great location, close to the city but still in the country, and it has lots of trees. In fact, the development is named after trees; even the streets have tree names.

Property with trees usually sells first and for more money. However, many new homeowners are disappointed when, in the months to 10 years following construction, all of the trees start dying on their property. That's usually when help is called in to determine what "disease" is attacking the trees. It's a sad event when the homeowner learns that the cause is construction damage, and that it could have been lessened or avoided by following some important rules for building around trees.

*Save the beauty
and investment in
your property by
managing your
building area to
protect trees.*

by Cindy Garner
illustrations by Tim Frevert



Lay out your lot or building area to scale on paper, including trees. This will help to determine how structures and trees will fit together. Take time to assess the condition and value of each tree. Allow for grade changes, especially on sloped lots.

Before you purchase

When considering purchasing property with trees, look for locations that have had no disturbance to the site. In other words, no one has used mechanized tree removal, often referred to as “grubbing.”

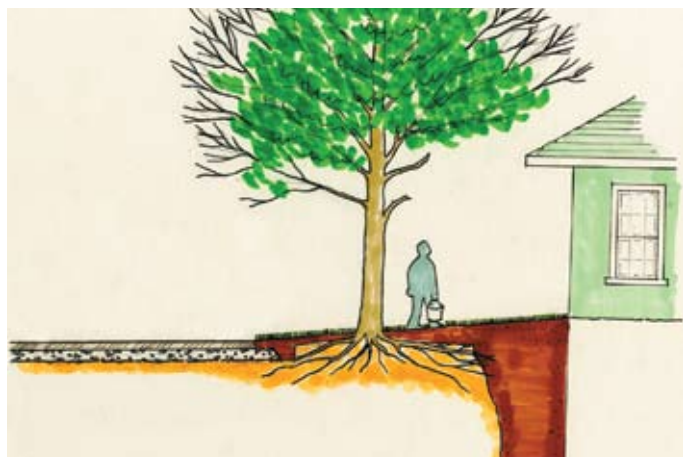
When a property is grubbed, younger trees and understory trees (trees that grow under the larger canopy trees) are removed. Understory trees consist of redbud, dogwood, serviceberry and other small native tree species. Also lost during this process are many different types of native shrubs and wildflowers.

Grubbing can cause soil compaction. Soil compaction is the leading cause of tree death on a construction site. Tree roots mostly lie shallow in the soil, as shallow as 2 to 18 inches. The majority of the roots in this area are the small, fine, hair-like feeder roots, which are the life support system of the tree. When the soil is compacted by equipment and/or repetitive movement, oxygen and water become unavailable for these roots, causing tree decline and death.

Consider hiring a tree professional, such as a Certified Arborist or Consulting Forester, to look at the piece of property with you. They can assist with identifying tree species and determine which dead or dying trees should be removed, as well as which trees might be considered special for your property. They can also offer guidance throughout the construction process, helping you communicate your wishes to the builder and establishing tree protection during construction.

How to get started

If you have already chosen your contractor, include them at this time. Be sure to communicate to them



Tree roots are easily damaged by any nearby digging or filling. Soil compaction limits root regrowth. It may be best to remove weak trees or trees that cannot be adequately protected.

exactly what you expect to accomplish for your property and your home.

Before any equipment is brought in, you will need a map drawn to scale of your property. It is easier to move items around on paper than it is to move heavy equipment around on site. This map should include all property lines, the dimensions (footprint) of the structure and the driveway, the amount and location of grading to be done, all of the utilities that are pre-existing and proposed. Remember, utilities include water, electrical, sewer, septic system lateral lines (if required), cable, and in-ground irrigation.

In order to properly save trees, this is the time to ask your contractor lots of questions about the site work. If you cannot obtain answers to these questions, then it is not the time to place any equipment on your property. Rather, continue to work on your paper plan. Once you are able to locate these items on your map, it is then time to move on to the physical layout of these items on the ground.

On the site, lay out the footprint of the home and all of the above-mentioned items. Use bright-colored flagging or spray paint to mark the lines. By identifying all of these areas, you should be able to see exactly which trees will be impacted by construction.

At this time, inspect the adjacent trees (outside of the footprint and of the utilities corridor) and identify which trees to save or which ones to remove when the heavy equipment is on site. So, how do you know which to remove? Keep this in mind when making your decision: Tree roots grow horizontally in the soil with a length up to two times the height of the tree. Visualize the tree you are considering saving, lay it down on its side and flip it again in most any direction, and you will probably be in the feeder roots of the tree. So, if the very large tree that you want to save falls into any of the construction zones, then it should be considered a candidate for removal.

Look around; are there any younger, smaller trees in this same area? Younger trees are better choices because younger tree roots do not have the horizontal length to them that larger tree roots have. Therefore, younger trees can acclimate easier to the ongoing construction damage with a greater chance of survival.

For example, a circle drive around a large oak tree is not the best choice for survival of the tree. You may want to move the driveway location and choose a smaller oak to build the circle drive around. Larger, older trees can be saved, but they require special care. You improve your chances for success with these and all trees if proper protection is installed around the saved

tree area before any equipment arrives on site.

Tree Protection

No matter the size of the tree, a protection barrier should always be installed. Tree protection should be a physical barrier—something that is visible to anyone that enters the construction site. Orange construction fence wired to T-post works well.

The fence or barrier should be placed as far away from the tree as possible. At minimum, the barrier should be set at the dripline on construction sites. The dripline is measured at the point on the ground beneath the farthest overhanging limb.

At this point in the construction process, I recommend you have another meeting with your contractor. Designate storage areas for materials, including soil. Soil placed inside of the saved tree areas has the same effect as compaction on tree feeder roots. Establish turn-around areas for equipment, parking for construction workers and concrete truck cleanout. I recommend you also do one more thing—meet with as many people as possible that will be working on your property. Damage often occurs unknowingly. Explain the purpose of the fence. As with most things, communication is vital.

If a barrier of orange fencing is just not possible, use mulch instead. Chipped bark mulch can be placed as deep as 10 inches around the saved tree areas. This protects the feeder roots by acting as a mattress for them. It also keeps the roots cool and moist. When the project is finished, rake the mulch out to about 3 to 4 inches deep and away from the trunk of the tree. This will help with post-construction care as well. During and after construction, watering trees can help reduce the mortality rate.

Finish Work

Trees are often damaged during finish work on a project. The tree protection fence is removed because final grade is about to occur. Remember that the tree feeder roots lie shallow in the soil, so if fill dirt is added any more than 6 inches deep and then graded out with equipment, then the same type of compaction and reaction occurs to the trees on the property.

The trees were there before construction, so they don't need any additional soil. Only add topsoil to open areas that you are considering for grass. Utilize the mulch rings as part of the landscape, and if the great



Set fencing so that as much undisturbed area as possible is retained around trees to be saved. Keep in mind roots extend well beyond the spread of branches. Smaller trees are more tolerant of disturbance than larger ones.

oak tree didn't have grass under it to start with, consider the mulch ring as the "grass" under it now.

Following these guidelines will help you retain both the beauty and value of your property. Contact a local forester or arborist or your regional Department of Conservation office (see phone numbers on page 1) for more information. A wealth of resources is also available on the Department Web site at www.missouriconservation.org/forest. ▲

Checklist for Constructing with care:

- ✓ Scaled detail map of property:
 - Location of structure and driveway
 - Location of all utilities
- ✓ On-site identification of all of the above (marked on the ground)
- ✓ Identify trees for removal
- ✓ Choose younger trees to save
- ✓ Choose areas of trees to save rather than one tree (if possible)
- ✓ Install tree protection barriers
- ✓ Use mulch instead of fences for barricades or better yet, use both
- ✓ Have a pre-construction meeting on site:
 - Make sure everyone understands why the fences are there
 - Everyone knows what you expect
- ✓ Write a contract that includes fines for encroachment on the protection areas
- ✓ Designate employee parking, turnaround areas and storage areas for all building supplies
- ✓ Drop in unexpectedly on your project often
- ✓ Prune trees for clearance of equipment to the site
- ✓ Remember that compaction hurts!
- ✓ If trenching is to occur anywhere in a saved tree area, make sure roots are cleanly cut, not ripped or torn
- ✓ Water saved trees during and after construction
- ✓ Consider hiring a tree professional to monitor your project and care for the saved trees

A young deer with large, upright ears is looking directly at the camera through a field of tall, golden-brown grass. The deer's coat is a mix of brown and tan. The background is a soft-focus field of similar grass.

THE BUTTON BUCK DILEMMA

*How does shooting young bucks
affect deer management?*

by Lonnie Hansen, photos by Noppadol Paothong

Eric was a longtime deer hunter who had grown up when there weren't many deer, and he always felt it was just not right to kill a doe. After all, he figured, does produce the deer of the future, and shooting one might reduce his chances of taking a deer down the road.

Recently, though, Eric had been reading magazine articles about deer management. The authors stressed the importance of taking does to maintain a healthy herd. He decided that the time had come to start harvesting does on the 200 acres that had been in his family for several generations.

Eric took a nice buck during the first weekend of the November portion of the firearms deer season, so he decided that during the second weekend he would try to take his first doe. The next Saturday morning, Eric was in his favorite tree stand on the edge of a corn-stubble field when a nice-sized deer without antlers walked into the field. It was around 75 yards away and stood broadside. Eric made a good shot.

When he went to inspect his harvest, he was shocked to find that the deer had two small knobs on its head. He was disappointed and muttered to himself, "This is what I get for trying to shoot a doe."

The deer was a button buck, which is a male deer born the previous summer, making it around 6 months old. On a button buck, the only evidence of antlers are small bumps on top of its head. Although these buttons can sometimes be seen in a hunting situation, they are sufficiently difficult to recognize that button bucks are classified, along with does, as antlerless deer and can therefore be taken on any type of deer hunting permit during the archery or firearms seasons.

In other words, it was perfectly legal for Eric to take the button buck. He also was bringing home some excellent table fare. But, like many other hunters, he wondered how taking button bucks affects the deer management strategy of maintaining the optimum ratio of bucks to does.

Hunters are harvesting a lot of button bucks. During Missouri's 2005 deer season they took 44,359 button bucks, which was 16 percent of the overall harvest.

Are we reducing potential future buck numbers by taking so many button bucks? To learn the answer, we need to look at some of the facts about how button buck harvest affects overall deer abundance and the future availability of adult bucks.

Whitetail Model

One way to evaluate the effects of hunting on deer numbers is by using a population model. A population model is a mathematical formula used to predict the growth or decline of a deer herd. The formula takes into account natural mortality, reproduction and hunter harvest. Our population model is based on research on Missouri deer.

Studies have shown that Missouri deer are very productive. Most mature does (at least 2 years old) produce twins, and 10 to 15 percent produce triplets. In our most productive range in northern Missouri, about 35 percent of 1-year-old does produce a fawn.

Other Missouri studies have shown that hunting is a big part of total mortality among rural deer. During a typical deer season, hunters take about 20 percent of the button bucks, 50 percent of the 1.5-year-old (yearling) bucks, and 20 to 25 percent of the does 1.5 years of age and older.

Under this harvest pattern we would expect the deer population to remain stable, with about 35 percent of the fall population being 6 months old, 12 percent of the population consisting of yearling bucks, and 9 percent of the population being bucks age 2.5 years and older (adult). Adding the last two percentages tells us that about one in five deer would have a visible set of antlers.

Now that we have an idea of the "normal" deer population, we can determine what might happen if we changed the harvest by deer hunters. For example, what

effect would cutting button buck harvest in half—from 20 percent to 10 percent—have on overall deer numbers and the number of adult bucks?

Our model shows that after several years of reduced button buck harvest, the fall deer population would still be stable but it would be 3 percent larger than the "normal" population due to a 12 percent increase in the number of adult bucks. So, cutting button buck harvest in half would result in a small increase in the number of adult bucks.

On the other hand, if we reduced yearling buck harvest by half, after a few years we could see a 50 percent increase in the number of adult bucks, a significantly greater impact than achieved by a reduction in the button buck harvest.

The reason for the difference is that hunters take a much smaller proportion of button bucks than yearling bucks. In other words, there is less potential to reduce overall button buck harvest.

**Are we
reducing
potential
future buck
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many button
bucks?**



Most mature does (at least 2 years old) in Missouri produce twins, and 10 to 15 percent produce triplets.

Another factor is that button bucks have to survive one more year than yearling bucks before they become adults.

It's also easier for hunters to identify yearling and older bucks because their antlers are more visible. Although many hunters are able to spot the small nubs of button bucks, it may not be practical to require them to do so. It makes more sense to restrict the harvest of young antlered deer.

Another consideration is that young bucks are highly mobile in Missouri. As many as 75 percent of radio-tracked young buck deer move away (disperse) from their birth place. By the time bucks reach 2 years of age, they usually have a home range in which they remain

for the rest of their lives, although they might move widely during the breeding season.

The average distance moved by dispersing bucks was 9 miles, but some deer moved more than 100 miles. This means the button bucks you protect during the hunting season probably will not be on your property the following hunting season. However, the yearling buck on your property during the gun season probably has already become established in the area. If not harvested by you, it may very well be on your property next year as a 2.5-year-old buck.

For all these reasons, protecting yearling bucks has a more immediate and greater payback in terms of

future adult buck availability on your property than protecting button bucks.

You might wonder if it helps at all to avoid taking button bucks where you hunt. The answer depends on your management objectives. If your goal is to produce older-aged bucks, then reducing the harvest of yearling bucks is your best strategy.

This is not to say that reducing button buck harvest won't have any effect. If everyone over a large area surrounding your property reduces button buck harvest, the result could be an improvement in the number of adult bucks on your hunting area. Also, there may be some button bucks on your land that will likely stay put and grow older there.

Reducing the Herd

In counties where we need to stabilize or reduce deer numbers, the Department of Conservation would prefer to see more does and fewer button bucks taken.

Again, the model helps demonstrate the dynamics. If button buck harvest is cut in half and those hunters who don't take button bucks instead take adult does, overall deer numbers would decline by 3 percent annually. Advantages of this reduction include fewer problems with overpopulated deer. In addition, fall breeding activity would probably become more intense, because the more balanced buck-to-doe ratio would result in greater competition among bucks for does.

Many Missouri deer hunters just want to take a deer, no matter what size or gender. If this describes you, especially if you live in an area where deer numbers are low, then you should harvest any legal deer. In fact, if you are in an area where you would like to see more deer, taking a button buck or yearling buck instead of a doe may be a better choice.

Eric's Conclusion

Eric's shooting of a button buck when he meant to shoot a doe won't have much effect on the deer population on his family property. That deer likely would have dispersed to someone else's property the following year. But, Eric, wanting a more balanced population, decided he would look more carefully at the next "doe" he decides to shoot.

In many parts of the state, adequate doe harvest is essential if we are to continue to manage deer at levels that best meet the desires of Missourians. In these locations, shifting harvest pressure from button bucks

and yearling bucks to does will help us to achieve these management goals.

Deer management is an important outcome of deer hunting, but most of us hunt deer because we enjoy being outdoors with family and friends. Putting restrictions on ourselves that go beyond the deer hunting regulations may not be appropriate if they significantly detract from this enjoyment.

Never forget that as a deer hunter you play an important role as a deer manager, but please continue to enjoy the great deer hunting experience. ▲

IDENTIFYING BUTTON BUCKS

- The nubs on a button buck often are visible with careful examination, especially through binoculars.
- A button buck's head is flat on top between the ears, while a doe's head is more rounded.
- Button bucks are more likely to be by themselves than other antlerless deer.
- If more than one fawn is present in a group, the larger of the fawns is likely to be a button buck.
- Button bucks are often the first to enter a field or feeding area.



Antlerless deer can be taken on any type of deer hunting permit during the archery or firearms seasons.



CHRIS BARNHART

Juvenile black sandshell mussels

BUYING TIME *for* endangered species

Conservation Department hatcheries are working to support endangered native fish and mussel populations until good habitat can be protected and restored for their long-term survival. by Rich Cook



Missouri's landscape has been changing with its growing human population. Our rivers and streams have been channeled (straightened, deepened and reinforced), reducing habitat for the spawning and rearing of some species of fish and other aquatic animals. Some rivers have also been dammed, keeping fish from reaching their historic spawning grounds. Pesticides, fertilizer and erosion have also degraded many of Missouri's waterways.

Of the 12 federally endangered animal species found in the state, nine live in rivers. These include three fish and six species of native mussels. As steps are

taken to stop the decline of these species, the Missouri Department of Conservation's hatcheries are taking an active role by supplementing existing populations.

Several factors come into play when raising endangered species. The first challenge is obtaining the adults used to produce the offspring. Once the fish are at the hatchery, propagation work begins. Some fish spawn on their own in a hatchery setting, while hatchery staff must inject hormones into other species to induce spawning.

The endangered species raised in Missouri's fish hatcheries include Topeka shiners and pallid and lake sturgeon. Endangered native mussels, such as pink mucket, fat pocketbook and scaleshell, are also raised.

Topeka shiners are federally endangered and are being produced at the Lost Valley Fish Hatchery. They are a small shiner that reaches a maximum length of 3 inches. They can only be found in two watersheds in Missouri.

The first shiners were taken to Lost Valley in 2000 to begin work on propagation. This was the first attempt at raising the shiners in a hatchery pond, and hatchery staff had to guess at the kind of pond environment they would need for spawning.

PALLID
sturgeon can
live 40 years,
weigh up to 65
pounds and
attain a length
up to **6 FEET**

simulate the type of stream pool where they might be found. At the end of the first three years, only a handful of young were raised. Hatchery staff realized that changes needed to be made for the next year.

For the first three years, 60 to 80 adult shiners were placed in a rearing pond. Creek gravel was provided for them to deposit their eggs on, as they do in their natural environment. The water level and temperature were manipulated to

For the fourth year, 100 shiners were placed in the pond along with nine orangespotted sunfish. The sunfish were added because most of the spawning observed in the wild has taken place at the edges of sunfish nests. It wasn't long before the shiners were schooled around the sunfish nests, following suit. The end result was that 100 adult shiners produced more than 22,000 young.

Pallid, lake and shovelnose sturgeons are the three types of sturgeon found in Missouri. These fish evolved millions of years ago and were still common in the big river systems only a century ago. The federally endangered pallid sturgeon can live 40 years, weigh up to 65 pounds and attain a length of up to 6 feet. The state-endangered lake sturgeon can live up to 150 years and has the potential to top 300 pounds and reach 8 feet in length. The shovelnose is the smallest of the three and is still abundant.

The Department's Blind Pony Hatchery, located at Sweet Springs, Mo., is one of only six hatcheries in the U.S. that raises pallid sturgeon. In fact, Blind Pony pioneered the spawning techniques for pallid sturgeon. In 1991, staff used techniques developed for spawning white sturgeon on shovelnose sturgeon. After success with the shovelnose sturgeon, Blind Pony started with pallid sturgeon in 1992.



PHOTOS BY JIM RATHERT

Hatchery staff discovered Topeka shiner spawning behavior increased in the presence of orangespotted sunfish nests.

The hunt for pallid sturgeon adults to serve as brood stock begins in March by biologists on the Missouri and Mississippi rivers. These fish are so rare that finding mature adults can be a problem. The males become mature at 5 to 7 years of age and the females at 12 to 15 years of age. Once the fish are captured, they are transported to Blind Pony.

Once the fish are brought into the hatchery for spawning, the adults are injected with a hormone. Approximately 15 hours after the injections, the fish are ready to spawn. The milt from the males is collected and stored in sterile, refrigerated containers until it is needed. The eggs from the females are collected by applying gentle pressure to the fish's abdomen, causing the eggs to flow out of the fish and into a collecting bowl.

MOST of the endangered species found in Missouri rivers are NATIVE MUSSELS

or larger. Throughout their time at the hatchery, the fish are fed a diet of frozen brine shrimp. By October, these fish are large enough to be tagged and released into the Missouri and Mississippi river systems.

A total of four pallid sturgeon females have been spawned in two production years (1992 and 1997) at Blind Pony. Approximately 10,000 9-inch fingerlings were released back into the Missouri and Mississippi river systems from these four females. Blind Pony hatchery is currently being renovated to include a new sturgeon-rearing facility capable of raising up to 14,000 pallid sturgeons each year.

Blind Pony also raises the state-endangered lake sturgeon. However, the lake sturgeon are not spawned



It can be difficult to find mature pallid sturgeon for use as brood stock.

at the facility. Instead, the hatchery receives fertilized eggs from the state of Wisconsin. After the eggs are hatched, they are raised with the same techniques used for the pallid sturgeon. All of the lake sturgeon are tagged before release into the Missouri and Mississippi river systems.

Sampling efforts are now underway on the big rivers. These hatchery-produced fish are beginning to show up in fair numbers, and they are proving that efforts to reintroduce the two species of sturgeon are having an effect on the population.

It may be surprising to learn that most of the endangered species found in Missouri rivers are native mussels. Most mussel larvae are parasites of particular species of fish, which means that they cannot reproduce unless that fish species is present. Fortunately, this



At Blind Pony Hatchery, lake sturgeon hatchlings (fry) are raised with the same techniques used for pallid sturgeon.

includes species such as bass and walleye that are produced routinely at hatcheries.

Since 1999, several mussel species have been raised through a combined effort between the state's hatcheries, including Lost Valley and Chesapeake Hatcheries, and Missouri State University. The federally listed **pink mucket**, **fat pocketbook** and **scaleshell** are among several species being propagated and released. So far, over two million juvenile mussels have been released.

The requirements for successful mussel rearing include gravid female mussels (ones carrying larvae), suitable host fish and the proper equipment to hold the host fish and capture the juvenile mussels. The search for gravid females starts in early spring and continues into late summer.

Once the mussel and host fish are ready, the inoculation process takes place. The valves, or shell, of the female mussel are spread apart far enough to access the gills where the glochidia (mussel larvae) are held. A syringe is used to flush the gills and release the glochidia into a holding container. These larvae only

range in size from 0.08 to 0.35 millimeters, so samples have to be counted with a microscope. The number collected from the mussel can range from a few thousand to several million, depending on the type of mussel.

The host fish are then placed in a tub or small tank with aeration (to keep the water oxygenated and the glochidia

suspended). The larvae then clamp down on the gills of the host fish. Ideally, up to 300 will attach. This number is small enough not to cause the fish too much stress. The inoculated fish are held in either a recirculating tank or flow-through tank depending on the host fish used.

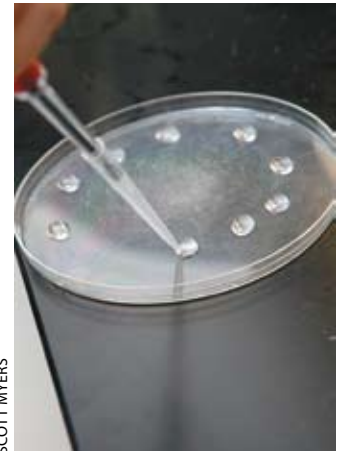
When the glochidia become attached, they begin metamorphosing into juvenile mussels. Once they have developed into a juvenile mussel, they release from the fish and are collected from the holding tanks by siphoning the water from the bottom and sifting it through small filters. About three days after the first mussel has released, all the mussels will have dropped off of the fish and will be stocked into their natural habitat. Because the host fish develops a resistance to glochidia, they are not used again and are released.

As Missouri's human population grows, continued changes to aquatic habitat can be expected. While protecting good habitat and restoring damaged habitat is the key to long-term survival of native species, efforts by Department hatcheries will hopefully "buy some time" for endangered fish and mussels, ensuring that they survive these changes. ▲



JIM RATHER

A scaleshell mussel requires a fish host to complete its life cycle.



SCOTT MYERS

Mussel larvae are so small that they must be counted using a microscope.



SCOTT MYERS

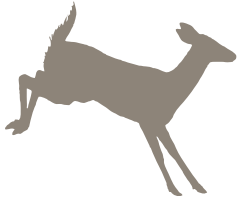
Mussel larvae (glochidia) attach to the gills of host fish and begin developing into juvenile mussels.



whitetails in the city

by Debra Burns, Erin Shank and John George, photos by Cliff White

Many Missouri communities use hunting to
help manage their deer populations.



When municipalities around Missouri's metropolitan areas were incorporated, no one dreamed that deer would adapt so well to suburban life.

When municipalities around Missouri's metropolitan areas were incorporated, no one dreamed that deer would adapt so well to suburban life.

This adaptability, coupled with city ordinances banning the use of firearms and, in many cases, archery equipment, allowed for the rapid growth of deer populations.

Today, deer are so abundant in many of our communities that deer management through hunting is sorely needed.

Suburban deer management through hunting can easily become a political hot potato, however. Old laws and old beliefs are hard to change, even when deer become so numerous that they start causing problems for the people who live near metropolitan areas.

In the end, the hard decision-making is left to local elected officials. They are the ones who have the ability to change firearms or archery ordinances to allow for deer hunting and, therefore, deer management.

"Cities have a leadership role," said Jim Page, an Independence city councilman. "They need to step forward, working with the Missouri Conservation Department to educate the public on what the problems are with deer overpopulation, such as deer/vehicle collisions, property damage and herd health. If a city is not willing to step up and work on deer issues, then nothing is going to get done."

Fortunately, several communities around St. Louis, Kansas City and Columbia have embraced that leadership role, creating solutions to suburban deer management in different but equally successful ways.

St. Louis

St. Louis County is home to 90 municipalities, each with its own set of ordinances and elected officials. Because deer overabundance is largely concentrated in the western section of St. Louis County, municipalities from that area decided to join forces and tackle the problem together. The West St. Louis County Deer Task Force formed in September 2003. It was made up of representatives from 10 area municipalities and four agencies.

"The deer herd size will continue to increase, and there will be a point in time when it will be unacceptable to the community," explained Skip Mange, a St. Louis County councilman. "The task force was formed to outline just what options municipalities have for deer management."

The task force completed a review of the wide variety of issues involved in managing suburban deer. After two years of researching and reviewing the topic, the task force generated recommendations for deer management in west St. Louis, with the primary focus on population control through archery hunting.

Putting these recommendations into action, the suburban St. Louis cities of Clarkson Valley and Chesterfield have both adopted revised ordinances that allow for archery hunting under certain restrictions. A few of these restrictions include allowing hunting only on certain size lots and only from elevated stands, and requiring hunters to have completed a bow hunter education course.

The restrictions are to ensure the safety of residents and hunters, although archery hunting already has a proven track record of being a safe sport.

The first year of the program in Clarkson Valley brought big success as 25 landowners registered their properties with the city for hunting. Hunters on those properties harvested 81 deer, 60 of which were antlerless. Perhaps the greatest success was that no incidents or complaints related to hunting were reported.

Kansas City

The Kansas City metropolitan area is a patchwork of four county and 74 city governments, ranging from rural to extremely urban. Attitudes, traditions and challenges unique to the municipalities tend to shape deer management in the region. Some local governments, such as Liberty, Raymore and Belton, have allowed archery hunting with certain restrictions within their city limits for many years.

Jackson County, known for its expansive 22,000-acre park system, has conducted managed archery and muzzleloader deer hunts on its park land for more than a decade.



Columbia's 2003 pilot program of archery hunting was so successful that it was continued and expanded.

"Since 1994, we have had 3,370 openings available to sportsmen," said Bruce Wilke from Jackson County Parks and Recreation. "Through the management program, a cumulative total of 2,108 deer have been harvested."

Wilke said people seem to recognize the problems that unchecked deer population growth brings to the parks and are willing to allow hunting as a management method.

"And, our safety record remains unblemished," he added.

Other municipalities are fairly new to dealing with deer management. In 2003, Kansas City changed its ordinance to allow limited hunting through the use of managed archery hunts. With more than 400 deer/vehicle collisions occurring on city streets each year, the hope of the city council was to improve public safety by reducing the number of deer within the city using hunting. The ordinance has allowed managed hunts to occur on 17 private

land locations and one county park, resulting in the harvest of 149 deer.

One year later, Parkville realized they also had a growing problem with the deer herd living downtown in the Parkville Nature Sanctuary, a 116-acre wooded park located right behind the city hall.

"Ten percent of our vehicle accidents in this area are deer related," reported Police Chief William Hudson. Residents also complained of landscape damage, and several were worried about the ecological health of the park.

With city approval in 2004, the Parkville Police Department, working with the Conservation Department, successfully began using managed archery hunts to reduce the deer population in the sanctuary.

The most recent ordinance change occurred in Independence. City officials there created an ordinance that allows archery hunting on parcels 15 acres or larger that are

Suburban deer management through hunting can easily become a political hot potato.



Limited archery hunting has been successful in several urban areas.

zoned agricultural, industrial or residential. It also allows for managed hunts in city parks in the future.

“We perceived there was a problem, did our homework on the issue, and passed the appropriate ordinance to deal with that problem,” explained Councilman Jim Page.

City officials feel this ordinance is a good starting point, and they indicated their willingness to make whatever changes are necessary in the future to ensure continued deer management in the city. The police department even created a landowner permission form and developed a brochure to help educate landowners and hunters.

“Overall we received very few phone calls against the ordinance prior to its passing,” Page said. “Since it has passed, nothing negative has been said, but I have had bowhunters call me up to thank me for the opportunity to hunt.”

Central Missouri

Communities in the heart of the state also have their fair share of deer conflicts. The pattern of deer numbers increasing when the animals are not hunted also occurs in smaller communities. By the time complaints are common, the problem is fairly well-established and some action must be initiated to reverse the negative trends. The cities of Boonville, Columbia and Fulton are good examples of central Missouri communities that are taking action.

Columbia’s earlier “no projectile” ordinance never defined arrows as projectiles. In the 1990s, the Columbia city council decided to leave that definition of the projectile ordinance alone, thereby allowing archery on private property for those who wanted to target shoot or hunt.

However, the number of deer/people conflicts in Columbia, including vehicle collisions and deer damage to home landscaping, kept increasing. This prompted the Conservation Department in 2003 to ask the Columbia City Council to allow a pilot program of archery hunting on certain city-owned properties. These included undeveloped tracts of land as well as multiple-use city parks. Hunters participating in this program were required to

attend a pre-hunt meeting at which they were given maps, a city-issued permit number, a parking permit and an explanation of the program's hunting regulations.

The program was so successful that it not only continued but has been expanded. Each summer, city officials and Conservation Department staff meet to discuss property additions and deletions to the program, as well as any other changes that might be necessary. The recommendations they decide upon for that year's hunting season are then incorporated into the city ordinance.

Fourth Ward City Councilman Jim Loveless said the city council appreciated Conservation Department professionals bringing the problem of increasing urban deer incidents to their attention and providing them with a number of alternatives to address the problem.

"It has been particularly gratifying to have our staffs working together to address this challenge in a proactive manner," Loveless said. "The program provides significant recreational opportunities while addressing an increasingly complex urban wildlife challenge."

For the last three years, the City of Boonville has relied upon a combination of archery hunting on private land and sharpshooters on private and public land to control deer numbers in the city. The program is coordinated through the Boonville Police Department. Last year, 81 harvested deer were donated to local families. Deer/vehicle collisions have dropped significantly.

In the fall of 2005, the City of Fulton passed an ordinance to allow archery hunting on selected private properties for a few days in October. With the successful experience from



Parkville Nature Sanctuary, in the Kansas City downtown area, hosted managed archery hunts to reduce vehicle accidents and landscape damage caused by resident deer.

that first hunt, plans are already underway for the continuation of the program.

For the future

Although managing suburban deer through hunting sometimes stirs emotional debate, these working examples demonstrate that success is achievable. It's good to know hunting is a safe and effective method of controlling the numbers of deer in suburban areas, because many cities likely will have to deal with the issue of deer management—if not now, then in the future.

When discussing the deer management program in Independence, Councilman Page offered this bit of advice to cities experiencing deer problems: "Contact the Conservation Department and work with them hand in hand; use their expertise. Mayors and city council members are not deer experts. Cities need to partner with the Conservation Department and use their knowledge to help make the right decisions." ▲

Although managing suburban deer through hunting sometimes stirs emotional debate, these working examples demonstrate that success is achievable.





Uncovering a Gem

*Restoring a glade
brings forth a
resurgence of
unique plants
and animals.*

by Tricia Radford
and Aaron Jeffries
photos by
Noppadol Paothong

Missouri's glades are receiving some exceptional treatment by private landowners and the Missouri Department of Conservation. These small, rocky, thin-soiled openings, once thought to be worthless, are being recognized as valuable island ecosystems that contribute to Missouri's biodiversity.

Glades support many unique and interesting insects, reptiles, mammals, wildflowers and grasses. They are home to eastern collared lizards, tarantulas and scorpions, and they provide habitat for prickly pear cactus, little bluestem, the smoke tree and Missouri primrose. The federally endangered bladderpod only grows on a small number of limestone glades in southwest Missouri.

Glades also are prized by birders, who visit them in hopes of seeing and hearing roadrunners, indigo buntings, painted buntings and prairie warblers.

In Missouri, glades are found in the southern half of the state and in a few locations north of the Missouri River. Our glades range from as small as a quarter acre to as large as 500 acres.

There are five types of glades in Missouri. Each is categorized by the type of bedrock—limestone, dolomite, sandstone, chert or igneous—beneath it. The bedrock below a glade greatly influences the native vegetation that grows there. Igneous and dolomite glades are the most common glade types in Missouri.

Although their geological foundations may differ, most glades have some features in common. The majority of these specialized habitats are rocky clearings that occur naturally in timbered areas. Most occur on steep, south- and west-facing slopes of hills, where natural forces have created a landscape of protruding or exposed rock formations and thin soil.

The combination of shallow, rocky soils and a southern exposure makes for near desert-like conditions on glades through much of the year. As a result, only plants that can thrive in sunny, droughty conditions survive. Drought-tolerant native grasses, sedges and wildflowers are usually plentiful on healthy glades. The wildflowers usually bloom either in spring or fall, when moisture levels are higher. Trees are generally absent or are stunted on normally functioning glades. This is due to the harsh growing conditions and the extremely dry soils, which set the stage for frequent fires.

Unfortunately, most glades in Missouri don't function as glades naturally would.

Years of fire suppression, overgrazing by livestock and quarrying have led to the destruction or degradation of many glades. What often happens is a dense canopy of trees (eastern red cedar, chinquapin, black and post oak) forms that crowds out and suppresses the sun-loving native grasses and wildflowers of a glade.

The Missouri Department of Conservation, other government agencies and some private landowners are working to restore



Dragonfly on blazing star

degraded glades in Missouri. With a little hard work and persistence, a cedar-choked glade can be transformed back into an open area with an abundance of native plants, insects and animals.

Restoring a glade is challenging but rewarding. The first time you catch a glimpse of a male painted bunting in its bright courtship hues of blue, red and yellow, or when a Missouri primrose begins to show its colorful bloom, you'll know why glades can be so appealing.

The Hard Work

The best way to restore a glade is to open it up by using a chain saw to remove its overstory of eastern red cedar and other trees. If you plan to cut the trees yourself, make sure your chain saw is in good working order and you have all the necessary safety equipment (chain saw chaps, hearing protection, leather gloves, steel-toed boots, safety glasses and a hard hat). Be prepared for some hard work.

You can also hire a qualified contractor if you are not quite up to the task. Using heavy equipment, such as bulldozers and tractors, to restore a glade is not recommended because the heavy weight could damage the glade's fragile rock formations and thin soils.

The compass plant's leaves orient north and south to maximize sun exposure. It is a common glade species.

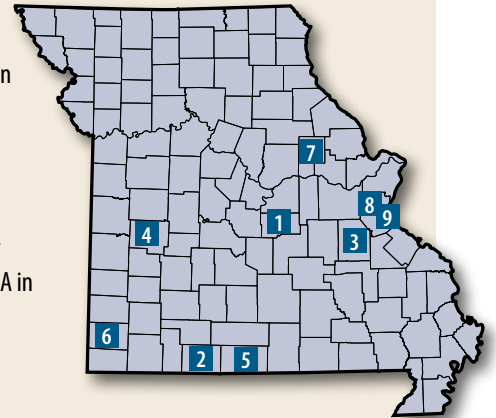
The best approach to clearing a glade is on foot, with a chain saw in hand.

You could simply cut the trees and leave them where they fall, but you may benefit from harvesting the cedar. It can go to cedar mills and eventually be turned into a variety of cedar novelty items, as well as cedar mulch.

Visit a Glade

Not everyone has a glade on their property, but the Conservation Department has several glades that people can visit for wildlife viewing or nature study. Some of the glades listed are in the process of being restored.

1. Spring Creek Gap Conservation Area (CA) in Maries County
2. Ruth and Paul Henning CA in Taney County
3. Hughes Mountain Natural Area (NA) in Washington County
4. Lichen Glade NA in St. Clair County
5. Caney Mountain CA in Ozark County
6. Wildcat Glade NA in Newton County
7. Danville CA in Montgomery County
8. Valley View Glades NA in Jefferson County
9. Victoria Glades CA in Jefferson County





Chipmunk



Eastern towhee



Indian paintbrush

Glade Species

Reptiles

- Eastern collared lizard
- Fence lizard
- Six-lined racerunner
- Three-toed box turtle
- Western pygmy rattlesnake

Plants

- Blazing star
- Calamint (or pennyroyal)
- Compass plant
- Indian paintbrush
- Pale purple coneflower
- Prairie dock
- Prickly pear cactus
- Missouri primrose
- Smoke tree
- Ashe's juniper

Birds

- Bachman's sparrow
- Carolina chickadee
- Common nighthawk
- Great-crested flycatcher
- Greater roadrunner
- Indigo bunting
- Tufted titmouse
- Eastern towhee
- Prairie warbler

Mammals

- Coyote
- Eastern chipmunk
- White-tailed deer



Tarantula



Missouri primrose



Coneflower



Six-lined racerunner



Indigo bunting

You can hire a logger to cut and sell the cedar trees on your glade, or you can cut and sell the trees yourself. Before you do either, it would be a good idea to contact a Missouri Department of Conservation forester. A forester can help you better understand the requirements of the cedar mills before you start cutting.

Restoring glades in Missouri is hard work and requires patience. Once the cutting begins, the area goes through what might be called an unsightly phase. This is a necessary step in transforming a degraded area into a functioning glade that hosts beautiful and interesting species of plants and animals.

Once you have let the cedar remnants dry by allowing them to sit on the ground for at least one year, you

are ready to conduct a prescribed burn. Burning a glade can be very challenging due to the downed trees, but it is critical to the restoration process. It rejuvenates the native plant community and reduces the amount of invading trees and other plants.

If the mere thought of conducting a prescribed burn causes your blood pressure to rise, you'll be happy to know that the Conservation Department conducts prescribed-burning workshops that can teach you the methods, safety measures and knowledge you will need to conduct a prescribed burn on your glade. Contact your regional office for more information about prescribed burn workshops (see page 1 for a list of regional office phone numbers). ▲

Private Land Glade Restoration

Grant and Tracy Woods and their daughters, Raleigh and Rea, restored 220 acres of limestone glade nestled in the beautiful hills of southwestern Missouri.

The Woods family enjoys exploring and spending time on their property, whether it be glade, streams or in the woodlands. They brought back glade habitat by removing eastern red cedars and using prescribed burning. The Missouri Department of Conservation and the Natural Resources Conservation Service provided them with technical assistance and information before and during the project.

Grant said glade restoration was hard work, but it was worth it. He said he's already seen different colors of wildflowers all year round on a recently restored glade.

"We have taken our least productive wildlife habitat, and turned it into our most productive wildlife habitat and cover areas," he said.

Public Land Glade Restoration

The Ruth and Paul Henning Conservation Area, on the west side of Branson and just a few miles from the Woods' farm, has about 350 acres of glades among its 1,534 acres. Most of the glade habitat is within the White River Balds Natural Area.

The Conservation Department began work to restore these glades in the early 1990s. Conservation Department Resource Forester Greg Cassell said the dolomite and limestone glades in the natural area now represent some of the highest quality glades in the Midwest.

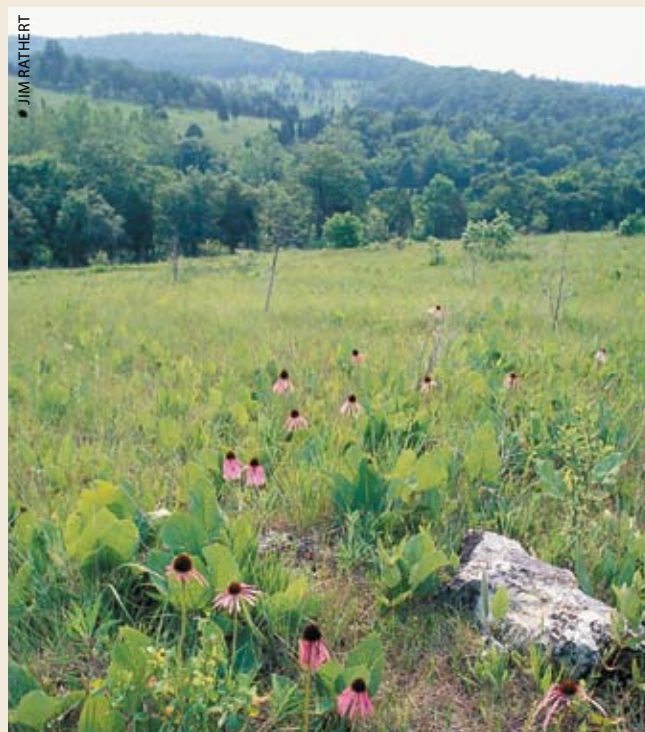
He said the Department continues to manage the glades to maintain and improve the wildlife habitat they provide.

"Although it is a challenge to manage glades in an increasingly urban area," Cassell said, "the Henning Conservation Area glades represent an important and unique habitat that should be protected and maintained for all to enjoy—now and in the future."

The conservation area has walking trails and three observation decks for people to enjoy the beauty the glades have to offer. A brochure on Ruth and Paul Henning CA is available from the Southwest Regional Office at 417/895-6880, or go to www.missouriconservation.org.



Since the Woods removed eastern red cedars from their property and conducted prescribed burns, wildflowers and wildlife habitat have flourished on their glade.



Visitors to Ruth and Paul Henning CA can take advantage of trails, viewing decks and other facilities.



Tree City USA honors Missouri communities

Sixty-nine communities in Missouri received Tree City USA certification by The National Arbor Day Foundation for their efforts in 2005. Tree City USA is sponsored by The National Arbor Day Foundation in partnership with the Missouri Department of Conservation. The program recognizes communities that actively care for trees on public property.

Special care is needed to protect trees from tough urban conditions: pollution, poor soils, scorching heat, restricted roots, road salt and vandalism. Providing that special kind of care is what a good community forestry program is all about.

To qualify for certification, a community must meet four standards set by The National Arbor Day Foundation. They include adoption of a tree ordinance outlining how trees on public property will be cared for, establishing a tree board or department, expending at least \$2 per capita on tree care, and celebrating Arbor Day.

Communities that meet these requirements are publicly recognized for their contribution to better community forests. The 69 certified communities have found a key to helping trees and to creating a safe and attractive town. To see if your community qualifies for certification check out www.missouriconservation.org and search under "Tree City USA."

TIME TO THINK ABOUT ARBOR DAY POSTER CONTEST ENTRIES

It is time for fifth-graders across Missouri to get out crayons, paints, colored pens and pencils and prepare entries for the 2007 Arbor Day Poster Contest. Winners receive cash prizes for their efforts. The theme is "Trees are Terrific . . . and Forests are, Too!"

The Conservation Department sends contest packets to fifth-grade teachers in public, private and home schools statewide each year. Any fifth-grade teacher can request a packet by contacting Donna Baldwin, poster contest coordinator for Missouri. Requests can be mailed to Baldwin at PO Box 180, Jefferson City, MO 65102, or by sending an e-mail to donna.baldwin@mdc.mo.gov. The packet includes lesson plans, hands-on activities and contest

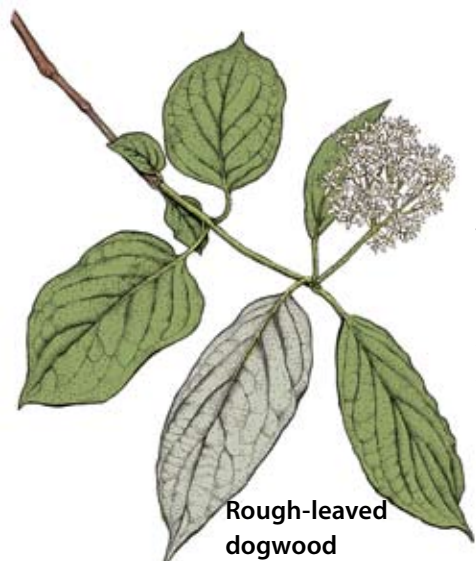
Coast Guard retiree still saving lives

Mark Riley of Villa Ridge, Mo., was having his morning coffee, looking out over the pond from his deck one morning last May, when he noticed a large fish tail-walking and splashing around. The fish acted as if it were hooked on an angler's line. Curious, Riley called his son Zack to help him investigate. They discovered an enormous largemouth bass in serious distress. By the time they fetched a landing net, the fish was on its last "legs," rolling weakly near the surface in shallow water. When they netted the behemoth bass, they discovered a 9-inch bluegill lodged in its throat. Having retired from a 24-year career in the U.S. Coast Guard, Riley was not about to let a senior citizen—even a scaly, slimy one—die without a fight. He used one pair of pliers to dislodge the bluegill's sharp dorsal fins from the bass's gullet and another to pull the smaller fish free. After administering the fish equivalent of CPR to the bass, he released it, apparently no worse for wear. Then he turned his attention to the battered bluegill, which eventually swam off on its own power, too. "Another successful rescue mission under my belt," observed Riley. "It would have been a tragic loss of a magnificent bass and bluegill."



information. Each school's winning poster advances to the statewide competition. The winner advances to the national level. The state entry deadline is Jan. 12.

The state winner receives a \$50 savings bond, and a 6- to 12-foot tree is planted in their honor. The national winner will be announced on National Arbor Day, April 27, 2007. First prize is a \$1,000 savings bond and a lifetime membership in The National Arbor Day Foundation. The winning teacher receives \$200 for classroom materials, and the winner, his or her parents, and teacher receive an expense-paid trip to Nebraska City, Neb., birthplace of Arbor Day.



**Rough-leaved
dogwood**

Habitat Hint: Rough-leaved dogwood

If you want to attract wildlife to your property, consider the benefits of including rough-leaved dogwood (*Cornus drummondii*) in your landscape. This species typically grows in deep shade along streams, so it is not as well known as the flowering dogwood.

At least 40 species of birds, including vireos, bluebirds, indigo buntings, cardinals, kingbirds and thrushes, feed on dogwood fruits. Many other birds hunt for insects in its bark, and bobwhite quail (and other birds) use its dense thicket for shelter.

Rough-leaved dogwood can grow to a height of 20 feet. Most often, however, it is a multi-stemmed shrub about 8 feet tall. It flowers in late May to early June, and white, globe-shaped fruits ripen in late August or early September. The leaves turn burgundy in the fall.

This adaptable plant is native throughout Missouri, growing in a wide variety of soil and moisture conditions. It tolerates drought and extreme cold.

The ideal use for rough-leaved dogwood is on woodland edges or as a thicket for wildlife habitat. It spreads readily by sending out underground runners.

To learn more about Missouri's native plants, visit www.grownative.org. —Barbara Fairchild



Wetlands project focus of partnership celebration

The newly restored Dehn Wetland near Clinton served as an appropriate backdrop during a ceremony May 24 celebrating the completion of wetland restoration projects on Harry S Truman Reservoir lands managed by the Conservation Department. Director John Hoskins recognized the many partners who made this project possible and joined them in unveiling a sign commemorating the effort.

"There are many types of partnerships, but I am convinced that none is stronger than partners in conservation," Hoskins said. The celebration was especially appropriate since May was American Wetlands Month.

This project coupled the resources of government agencies, private conservation groups and private businesses with a North American Wetlands Conservation Act grant to restore 770 acres of marsh, bottomland hardwoods and wet prairie habitats at several sites in Henry and St. Clair counties.

The project added small levees and water-control structures to an existing pump station and pipeline and natural water-flow patterns to minimize cost and maximize benefits to waterfowl, shorebirds, reptiles, amphibians, mammals and other wetland-dependant wildlife and plants. The public will benefit from enhanced opportunities for hunting and wildlife viewing. For more information on this project or how to become a wetland conservation partner, call 573/522-4115, ext. 3353, or e-mail gene.gardner@mdc.mo.gov.

DU announces largest wetland conservation campaign in history

A prominent Missourian is taking a leading role in what Ducks Unlimited (DU) bills as the largest wetlands conservation campaign in history. August A. Busch, III, chairman of Anheuser-Busch Companies Inc., called the effort "a race against time."

"Wetlands for Tomorrow" seeks to raise \$1.7 billion in five years to fund nine initiatives to restore and manage millions of acres of wetlands. The initiatives are specific to certain areas of North America, so donors can direct gifts toward projects where they have special interests.

DU Executive Vice President Don Young said time is critical to the effort. "Every 10 minutes in the United States, an acre of wetlands is lost. We must reverse this trend, and with this campaign, we know we can do it."

More information is available at www.ducks.org/WetlandsForTomorrow/. To contribute, visit www.ducks.org/donateonline.



Northern shovelers



Greater prairie chicken

Planning for prairie chicken recovery

A new plan aims to turn the tide for Missouri's dwindling prairie chicken population. Prairie chicken numbers have declined from hundreds of thousands in the 19th century to only about 500 today. The Conservation Commission recently approved a five-year plan setting an ambitious goal of increasing the state's prairie chicken population to 3,000 and holding it there for 10 years. Partners in the effort include the Missouri Department of Natural Resources, the Missouri Prairie Foundation, The Nature Conservancy, Audubon Society chapters and Quail Unlimited. The plan calls for establishing tracts of at least 2,000 acres of high-quality grassland in several locations. Around these core areas, partners and landowners will maintain at least 8,000 additional acres of high-quality grassland. Work will begin around Wah-Kon-Tah Prairie Conservation Area (CA), Taberville Prairie CA, Hi Lonesome Prairie CA and large tracts of open land in southern Pettis County. If success is achieved there, efforts will expand to other areas. Visit www.missouriconservation.org/landown/wild/pchicken/ for more information.

Black Bass Anglers to hold crappie tourney Oct. 21

The International Federation of Black Bass Anglers Buddy Crappie Tournament will take place Oct. 21 at the Runaway 2 Resort at Lake of the Ozarks. The entry fee is \$50 per two-person team, and the payout is 80 percent of the total purse. The group also plans back-to-back crappie tournaments at Lake of the Ozarks April 28 and May 5, 2007, at Truman Lake. For more information, visit www.ifbba.org, or write to IFBBA Headquarters, 3034 E. 32nd St., Kansas City, MO 64128.

Lindenwood shotgunners are national champs

Lindenwood University in St. Charles has won its third Intercollegiate Clay Target National Championship in only four years of competition, establishing itself as a national competitive shotgunning powerhouse. This year's competition took place at the National Gun Club in San Antonio, Texas. Lindenwood's team of men and women shooters won first place in the American and international skeet competitions and the American trap competition. They also took second place in the international trap competition on their way to the overall championship.

SHORTLEAF PINE SYMPOSIUM

Shortleaf pine and oak-pine forest once blanketed more than 6.5 million acres of southern Missouri. Today's acreage is less than one-tenth of the original. A symposium titled "Restoration and Ecology of Shortleaf Pine in the Ozarks" will offer participants insights about what happened to those acres and what can be done to regain the biological diversity they once provided. The symposium will take place Nov. 7-9, 2006 at the University Plaza Hotel and Convention Center in Springfield. For more information, visit www.missouriconservation.org/science/sl_pine/#about or contact David Gwaze, 573/882-9909, ext. 3320, david.gwaze@mdc.mo.gov.



Shortleaf pine



Art Festival Nov. 4-5 in St. Charles

The Conservation Federation of Missouri and the Missouri Wildlife Artist Society will hold its second annual Missouri Wildlife Arts Festival Nov. 4 and 5 at the St. Charles Foundry Art Center, 520 N. Main Center, St. Charles. Hours are 9 a.m. to 5 p.m. Nov. 4 and noon to 4 p.m. Nov. 5. Admission is \$5. Children under age 16 are free. The festival offers the chance to visit with artists who work in media ranging from ceramics and bronze to painting and woodcarving and to purchase art directly from artists. Proceeds from art sales will go to groups sponsoring the event. The other sponsors are the St. Louis Greenway Network and the Open Space Council. For more information, call 800/575-2322, or 573/498-3479 or e-mail ron@openspacecouncilstl.org.



Powder Valley getting a birthday makeover

Powder Valley Conservation Nature Center in Kirkwood is celebrating its 15th anniversary. The center, at the northwest corner of I-270 and I-44 in Kirkwood, has had more than a million visitors to date. The 22,000 square-foot building is surrounded by 112 acres of oak-hickory forest with three hiking trails (one is handicapped-accessible) and demonstration gardens. It has an indoor wildlife viewing area, a 3,000-gallon aquarium, a living beehive and many other exhibits. Nature walks, indoor naturalist programs with live animals and a wealth of exhibits await visitors.

The nature center currently is updating its exhibits, but a 15-year birthday celebration is planned for next spring to unveil the new exhibits focusing on urban conservation. The center is open seven days a week from 8 a.m. to 5 p.m. except Thanksgiving, Christmas and New Years Day. The trails are open from 8 a.m. to 8 p.m. during daylight-savings time and from 8 a.m. to 6 p.m. the rest of the year.

A new class of conservation agents will be making an impact

in communities across Missouri. The 19 recently commissioned agents have been furnished with the skills, equipment and authority to protect and enhance conservation in Missouri.

Agent trainees must successfully complete more than 1,000 hours of training, including more than 200 hours of on-the-job training with veteran agents. When they graduate, they are licensed Missouri peace officers, able to enforce all Missouri statutes, including Missouri's Wildlife Code.

Because most people first think of their county conservation agent when they have a fish, wildlife or land management problem or question, agent trainees also learn about a variety of conservation practices, ranging from creating edge habitat to controlling nuisance wildlife.

The training for these 19 graduates will continue through their careers. Not only will they learn as they work, but they must complete annual training to maintain their peace officer status and to keep current on Conservation Department programs and Wildlife Code regulations.

"We only have them for six months," said Protection Programs Supervisor Roy Hoggatt, who teaches many of the training classes, "but I like to think they are equipped with the tools and the knowledge to think on their own and be successful."

The latest graduating class joins 196 commissioned conservation agents already in the field. The next class will likely take place in 2008. Application information for that class will be announced in the *Conservationist* and under the "Jobs" section of the Conservation Department's website at www.missouriconservation.org.—Tom Cwynar

The 2006 Conservation Agent class and their assigned counties. Top row

from left: Matthew Spurgeon, temporarily to Bollinger/Cape Girardeau/Perry; Jason Braunecker, temporarily to Phelps; Justin Fogle, Vernon; Matt Hitchings, temporarily to Cole; Matt Hamilton, Maries; Steve Adam Strader, McDonald.

Center row from left: Jake Strozewski, temporarily to Cass; Brock McArdle, Lewis;

Kyle Booth, Pemiscot; Jerid Wilkinson, Audrain; William Billy Barton, Iron; Ryan Duey, Shannon; Andy Barnes, Lawrence. **Bottom row from left:** Adam Doerhoff, temporarily to Adair/Macon; Kevin Eulinger, Lincoln; Becky Olerich, Monroe; Jennifer Hershberger, Laclede; Ben Pursley, Washington; Aaron Post, Platte.



Outdoor Calendar

Hunting

	open	close
Common Snipe	9/1/06	12/16/06
Coyotes	5/15/06	3/31/07
Crow	11/1/06	3/3/07
Deer		
Archery	9/15/06	11/10/06
	11/22/06	1/15/07
Urban Counties (antlerless only)	10/6/06	10/9/06
Youth	10/28/06	10/29/06
November	11/11/06	11/21/06
Muzzleloader	11/24/06	12/3/06
Antlerless	12/9/06	12/17/06
Dove	9/1/06	11/9/06
Furbearers	11/15/06	2/15/07
Groundhog	5/15/06	12/15/06
Pheasant		
North Zone	11/1/06	1/15/07
South Zone	12/1/06	12/12/06
Quail	11/1/06	1/15/07
Rabbits	10/1/06	2/15/07
Ruffed Grouse	10/15/06	1/15/07
Sora and Virginia Rails	9/1/06	11/9/06
Squirrels	5/27/06	2/15/07
Turkey, Archery	9/15/06	11/10/06
	11/22/06	1/15/07
Turkey Fall Firearms	10/1/06	10/31/06
Waterfowl	please see the <i>Waterfowl Hunting Digest</i> or see www.missouriconservation.org/hunt/wtrfowl/info/seasons	
Woodcock	10/15/06	11/28/06

Fishing

Black Bass (certain Ozark streams, see the Wildlife Code)	5/27/06	2/28/07
impoundments and other streams year round		
Bullfrog	sunset	midnight
	6/30/06	10/31/06
Gigging nongame fish	9/15/06	1/31/07
Trout Parks	3/1/06	10/31/06

Trapping

Beaver	11/15/06	3/31/07
Furbearers	11/15/06	2/15/07
Otters & Muskrats	11/15/06	see Wildlife Code

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* and the current summaries of "Missouri Hunting and Trapping Regulations" and "Missouri Fishing Regulations," the "Fall Deer and Turkey Hunting Regulations and Information," the "Waterfowl Hunting Digest" and the "Migratory Bird Hunting Digest." This information is on our Web site at www.MissouriConservation.org/regs/ and at permit vendors.

The Conservation Department's computerized point-of-sale system allows you to purchase or replace your permits through local vendors or by phone. The toll-free number is 800/392-4115. Allow 10 days for delivery of telephone purchases. To purchase permits online go to www.wildlifelicense.com/mo/.

Bobwhites aren't allergic to ragweed

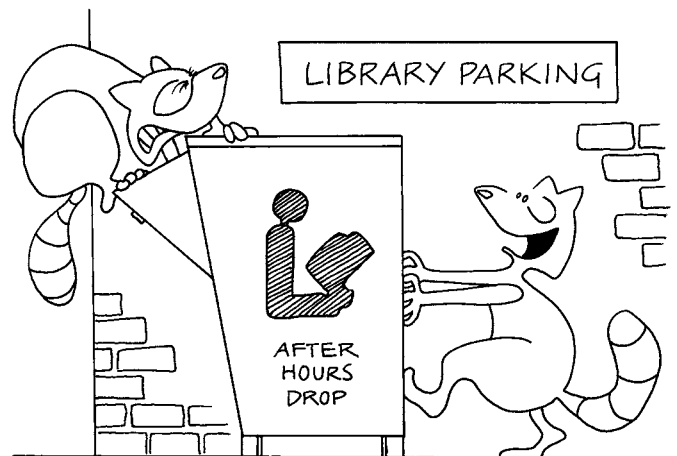
Every fall, allergy sufferers complain about ragweed. If bobwhite quail could talk, however, you would get a different story. Quail love ragweed, because this native plant produces seeds they find delectable. Besides that, mature stands of the tall, woody annual weed create ideal bobwhite brood-rearing and roosting habitat. Lots of other wildlife are wild about ragweed for the same reasons. Wildlife-minded landowners can encourage ragweed by light disking, burning, grazing or herbicide application. These practices all encourage sprouting of dormant ragweed seeds. For more information about land management for bobwhite quail, write for a copy write to MDC, *On the Edge: A Guide to Managing Land for Bobwhite Quail* from Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102, or e-mail pubstaff@mdc.mo.gov. For help implementing the advice contained in the booklet, contact the nearest Conservation Department office and ask to speak with a private land conservationist.



Bobwhite quail

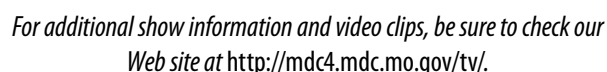
Lake of the Ozarks home to newest QF chapter

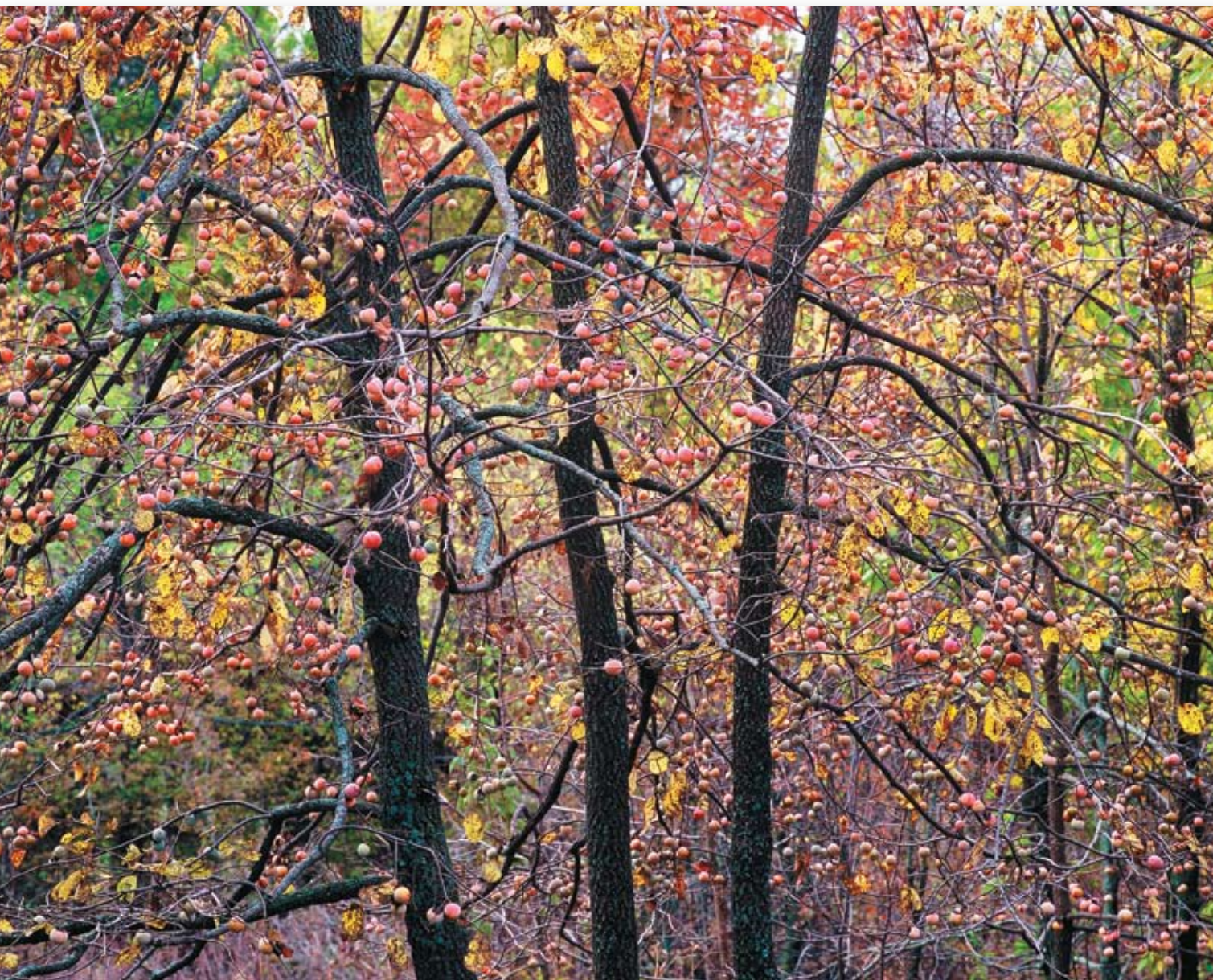
Quail hunters around Lake of the Ozarks now have a way to get involved in restoring bobwhite numbers in their home area. Quail Forever (QF) has formed a new chapter in Camden, Miller and Morgan counties. The Osage Whistlers Chapter is led by President Donnie Cauthron of Preston. The chapter plans to focus its efforts on landowner education and on creating and enhancing quail habitat in the three-county area. For more information about the Osage Whistler Chapter of QF, contact Cauthron at 417/722-4722, lordmaul002002@yahoo.com. For more information about QF, including how to start a chapter, contact Elsa Gallagher at 573/680-7115, egallagher@quailforever.org.



chmielniak

"Don't lose heart, Gabe. A trash can this secure can only mean there's something really good to eat inside it."





Bountiful boughs

Persimmon trees are the feature photo for the month of October in the 2007 Natural Events Calendar. Order your calendar and other wonderful items from the Nature Shop insert in this issue.—*Pat Whalen*



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